Dec. 20, 1932. M. E. HENNING 1,891,536

TEMPORARY CONTROL DEVICE FOR SWITCH MECHANISM

Filed April 23, 1929

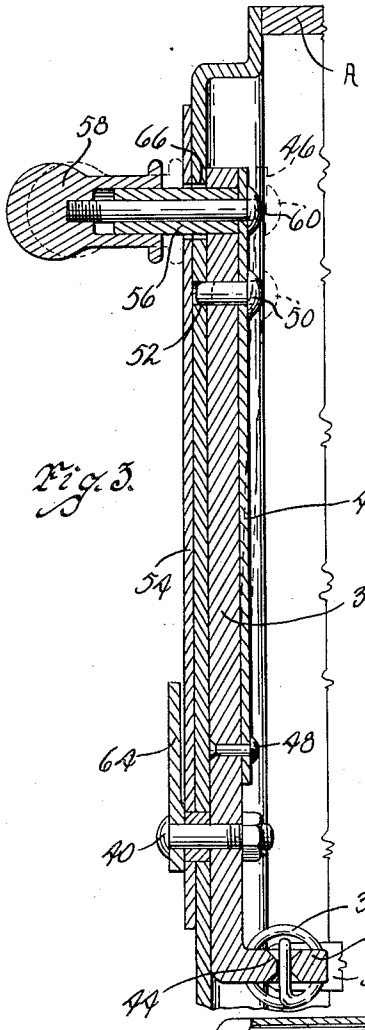


Fig. 3.

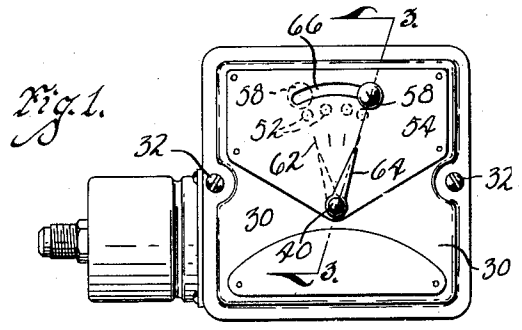


Fig. 1.

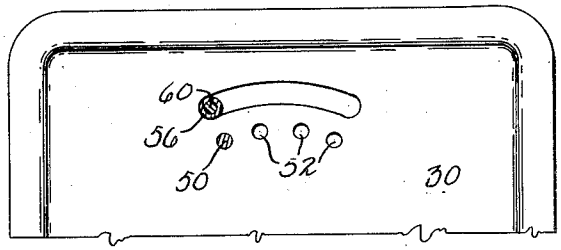


Fig. 4.

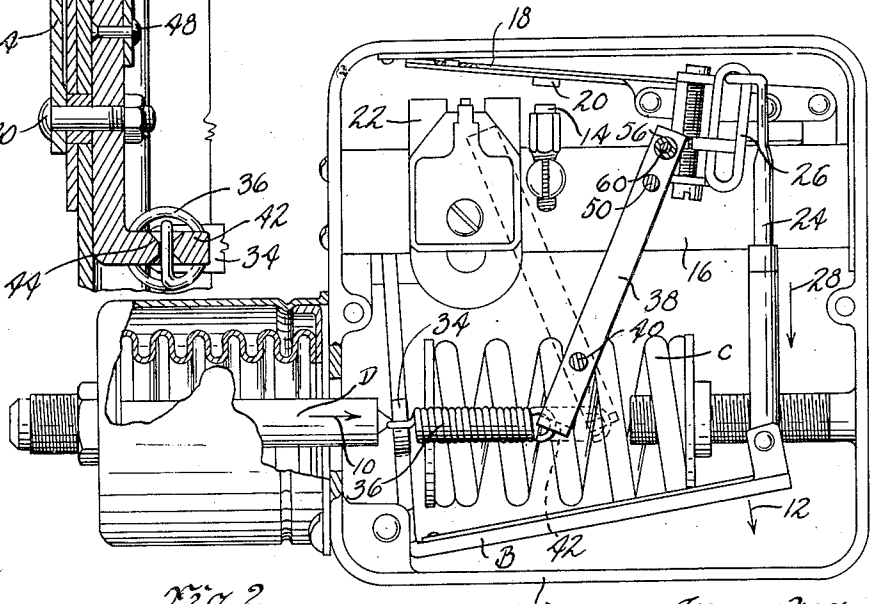


Fig. 2.

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UNITED STATES PATENT OFFICE

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TEMPORARY CONTROL DEVICE FOR SWITCH MECHANISM

Application filed April 23, 1929. Serial No. 357,393.

The object of my invention is to provide a temporary control for rendering a switch operable at a point different from its initial setting.

It will be understood that in refrigerating plants, it is desirable at some times to have the refrigerating unit operate faster so as to get a quicker freeze. The refrigerating unit is normally set at an initial point of operation according to the desired temperature.

My device is applicable to be manually controlled for temporarily changing the point of operation of the switch structure at which time, the refrigerating unit is kept in operation.

It will be further understood that in refrigerating plants, an automatic switch is provided for making an electric contact for setting the unit into operation and when a certain temperature has been reached, then the unit is rendered inoperative and upon such a switch device, I mount my temporary control.

Still a further object is to provide means whereby various points of operation of the switch may be had by manually controlling my device.

One advantage of my structure resides in the fact that I am able to set the switch at a point other than its normal point of operation so that the refrigerating unit will operate faster and freeze more rapidly, thus giving to the user of the refrigerator, an opportunity to freeze or cool items quickly, when desired.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a front plan view of my improved switch, including my temporary control device.

Figure 2 is a similar view with the front cover plate removed.

Figure 3 is a detail sectional view on the line 3—3 of Figure 1; and

Figure 4 is a plan view of a portion of the cover plate, looking at the inner side thereof.

In the accompanying drawing, I have used the reference character A to indicate generally, a casing having a bell crank lever B mounted therein and capable of slight pivotal movement.

A spring C engages one side of the bell crank lever and a bellows device D opposes the force of the spring C. The bellows device D may be of any suitable type and is operable as a result of the temperature within the refrigerator box or unit.

In Figure 2 of the drawing, the switch is shown in its "off" position. The movement of the bellows device D in the direction indicated by the arrow 10 will cause the lever B to swing in the direction indicated by the arrow 12 and thus, the parts move to operative position, as will hereinafter be more fully set forth.

A fixed contact 14 is carried by an insulated block 16 within the casing A. An armature arm 18 has a contact 20 thereon adapted to engage the fixed contact 14. A magnet 22 is carried by the insulated block 16 and coacts with the armature arm 18.

The particular type of armature arm and magnet forms no part of my present invention except in combination with the temporary control herein described.

The lever B is connected to the armature arm 18 by means of a tie rod 24. An adjusting device 26 is used to connect the tie rod 24 to the armature rod 18.

An electric circuit is established when the movable contact 20 on the armature arm 18 engages the fixed contact 14.

The time of operation or initial point of operation may be set by means of the adjusting device 26.

It will be noted that movement of the bellows device D against the action of the spring C will cause the tie rod 24 to move in the direction indicated by the arrow 28 and ultimately, the armature arm 18 will move toward the magnet 22, at which time, contacts 20 and 14 will be in engagement with each other.

My improved temporary control device is mounted on the cover plate 30 of the cas-

ing A. The cover plate is adapted to be secured to the casing A by means of screws or the like 32.

Upon one portion of the lever B I form a lug or lip 34 having an opening therein (not shown) to receive one end of a coil spring 36.

A lever 38 is pivoted on the bolt 40, which in turn is supported in an opening formed in the cover plate 30. The lever 38 is formed at its lower end with a right-angled extension 42 having a chamfered opening 44 therein. The free end of the coil spring 36 is connected to the extension 42 of the lever 38. The lever is carried by the cover plate 30 as a unit.

A spring bar 46 is riveted to the lever 38 by means of a rivet or the like 48. Near the upper end of the spring bar 46 is a pin or the like 50 adapted to extend into any one of a plurality of openings 52 formed in the cover plate 30. An auxiliary or false cover plate 54 is secured to the outer surface of the main or primary cover plate 30.

The lever 38 has a sleeve 56 connected thereto and a knob 58 is slidably mounted relative to the sleeve 56. The knob 58 is connected to the spring bar 46 by means of a bolt or the like 60.

It will be noted from the construction of the parts just described, that movement of the knob 58 inwardly or toward the cover plate 30 will cause the spring bar to move inwardly and away from the lever 38. The spring bar 46 normally holds the control knob 58 at its outward limit of movement.

When the spring bar 46 has been moved away from the lever 38, then the pin 50 is free of any one of the openings 52.

Upon the false cover plate 54, I provide various indicating characters 62 and a pointer 64 is carried by the pivot bolt 40 so that when the lever 38 is moved it will likewise cause the pointer 64 to be moved.

An elongated slot 66 is formed in the cover plate 30 as well as in the false plate 54. The sleeve 56 extends through the slot 66.

The normal position of the knob 58 and the pointer 64 is as shown in solid lines in Figure 1 of the drawing. When it is desired to change the initial setting of the switch, then the knob 58 is first moved inwardly so as to clear the pin 50 from its respective opening 52 and thereafter, the knob as well as the lever 38 may be moved from right to left.

The lever may be locked in any one of its various positions by allowing the pin 50 to be received in any one of the openings 52. It will be noted that when the lever 38 has been swung to its extreme position on the left hand side of the device, that the coil spring 36 will be placed under a tension and tend to normally pull the lever B in the direction indicated by the arrow 10 and likewise in a direction for making the contact members come together.

The coil spring 36 in effect, resists the full normal operation of the spring device C, thus changing the point of operation when the contacts 20 and 14 will engage with each other.

It will be noted that when the knob 58 has been moved inwardly and the parts are in the position shown in dotted lines of Figure 1 of the drawing, that the spring 36 will be placed under tension and will cause the lever to return to its original starting position.

It will be noted that I have provided a device which is very efficient for changing the point of operation of the switch and thus when it is desired to have the refrigerating unit operate faster or freeze more rapidly, all that is necessary is for the operator to manually move the lever 38 to one of its several positions and the device will then function automatically.

It will be further noted that all of the elements of the switch are encased and only the temporary control can be engaged by the operator for changing the temperature point of operation temporarily.

Sme changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. For use with a switch operable as a result in the change of temperature and initially set at a predetermined degree, means for changing the temperature point of operation of said switch comprising a manually operable control arm, a plate adjacent said arm, said arm being movable in a plane parallel with said plate, said plate having a slot therein, a control handle on said arm and depressible relative thereto, said control handle extending through said slot, a pin carried by said arm and slidable relative thereto, means constraining said pin toward said plate and spaced openings in said plate for said pin to selectively enter, said control handle being operatively connected with said pin to retract it from any one of said openings when said handle is depressed.

2. For use with a switch operable as a result in the change of temperature and initially set at a predetermined degree, means for changing the temperature point of operation of said switch comprising a manually operable control arm, a plate adjacent said arm, said arm being movable in a plane parallel with said plate, a control handle on said arm and depressible relative thereto, a pin carried by said arm and slidable relative thereto, means constraining said pin

toward said plate and spaced openings in said plate for said pin to selectively enter, said control handle being operatively connected with said pin to retract it from any one of said openings when said handle is depressed toward said plate.

3. A control device comprising a plate, a lever pivotally mounted for movement in a plane parallel therewith, and means for locking said lever in any one of several selected positions relative to said plate, comprising a pin, said plate having a series of spaced openings therein for said pin, and a handle for swinging said lever, said handle being longitudinally slidable relative to said lever and operatively connected with said pin to retract the same from any one of said openings with which it is coacting.

4. A control device comprising a plate, a lever pivotally mounted for movement in a plane parallel therewith, and means for locking said lever in any one of several selected positions relative to said plate, comprising a pin, said plate having a series of spaced openings therein for said pin, and a handle for swinging said lever, said handle being longitudinally slidable relative to said lever and operatively connected with said pin to retract the same from any one of said openings with which it is coacting, said plate having a slot for said handle to extend through.

5. A temporary control device for an encased temperature responsive switch, comprising a removable cover plate for the casing of said switch, a control lever pivotally mounted thereon, a detachable spring for connection with said switch and said control lever, and means for locking said lever in a selected one of several positions relative to said cover plate.

6. A temporary control device for an automatically operable control switch, comprising a cover plate for the switch, a control lever pivotally mounted thereon, a spring connected with the switch and with said control lever, and means for locking said lever in a selected one of several positions relative to the cover plate.

7. A control device comprising a plate, a control lever pivoted thereto, said plate having a series of spaced openings, a pin slidable relative to and carried by said control lever and adapted to coact with a selected one of said openings, a spring normally causing said coaction, and a handle operatively connected with said pin for retracting it from an opening with which it coacts.

8. A control device comprising a plate, a control lever pivoted thereto, said plate having a series of spaced openings, a pin slidable relative to and carried by said control lever and adapted to coact with a selected one of said openings, a spring normally causing said coaction, and a handle operatively connected with said pin for retracting it from an opening with which it coacts, said plate having a slot through which said handle projects.

9. A control device comprising a plate, a control lever pivoted thereto, said plate having a series of spaced openings, a pin slidable relative to and carried by said control lever and adapted to coact with a selected one of said openings, a leaf spring connected with said lever and with said pin to normally cause said coaction, and a handle slidable relative to said lever, extending through said plate and connected with said spring to retract said spring from an opening with which it coacts when said handle is depressed toward said plate.

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